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Claims

1. A device comprising:
 - a substrate having a contact plug extending therethrough;
 - a capacitor mountable on said substrate;
 - a first interlayer dielectric layer formed on said substrate;
 - a spacer layer formed on said first interlayer dielectric layer;
 - a first barrier layer formed on said spacer layer;
 - a buffer layer formed on said first barrier layer;
 - a layer of liner material formed on said buffer layer between said buffer layer and said contact plug;
 - a dielectric layer between a first electrode and a second electrode;
 - a second barrier layer extending over said device.
2. A device according to claim 1, wherein said dielectric layer is formed of ferroelectric material.
3. A device according to claim 1, wherein said first interlayer dielectric layer is formed of boron-doped phosphosilicate glass (BPSG).
4. A device according to claim 1, wherein said layer of liner material is formed of iridium.
5. A device according to claim 1, wherein said layer of liner material is formed of iridium oxide.
6. A device according to claim 1, wherein said first electrode is formed of tungsten.

7. A device according to claim 1, wherein said spacer layer is formed of electrically insulating material.
8. A device according to claim 7, wherein said spacer layer is formed of silicon dioxide.
9. A device according to claim 7, wherein said spacer layer is formed of tetraethyl orthosilicate (TEOS).
10. A device according to claim 1, wherein said first barrier layer is formed of a material substantially resistant to oxygen diffusion.
11. A device according to claim 1, wherein said first barrier layer is formed of silicon nitride.
12. A device according to claim 1, wherein said second barrier layer is formed of a material substantially resistant to oxygen diffusion.
13. A device according to claim 1, wherein said second barrier layer is formed of aluminium oxide (Al_2O_3).
14. A device according to claim 1, wherein said buffer layer is formed of dielectric material.
15. A device according to claim 1, wherein said buffer layer is formed of silicon dioxide.
16. A device according to claim 1, wherein said layer of liner material forms a glue layer to assist adhesion of said first electrode to said buffer layer.

17. A device according to claim 1, wherein said dielectric layer is formed of PZT.

18. An FeRAM device comprising one or more devices according to claim 1.

19. A method for forming a ferroelectric capacitor device comprising the steps of:

- forming a substrate;
- forming a first interlayer dielectric layer on said substrate;
- forming one or more contact plugs through said substrate;
- forming a spacer layer on said first interlayer dielectric layer;
- forming a first barrier layer on said spacer layer;
- forming a buffer layer formed on said first barrier layer;
- depositing a layer of liner material on said buffer layer between said buffer layer and said one or more contact plugs to form a first electrode;
- forming a dielectric layer on said first electrode;
- forming a second electrode on said dielectric layer; and
- forming a second barrier layer extending over said device.

20. A method according to claim 19, further comprising applying a chemical mechanical polishing process to said first interlayer dielectric layer prior to forming said spacer layer.

21. A method according to claim 20, further comprising etching said first interlayer dielectric layer and said substrate to form one or more apertures in said substrate for receiving said one or more contact plugs.

22. A method according to claim 21, wherein the step of forming said one or more contact plugs comprises filling said one or more apertures to form said one or more contact plugs.
23. A method according to claim 19, further comprising applying a chemical mechanical polishing process to said layer of liner material.
24. A method according to claim 23, further comprising depositing additional liner material on said polished layer of liner material.
25. A method according to claim 19, further comprising applying an oxygen annealing process to said device.
26. A method according to claim 19, wherein the step of forming said dielectric layer comprises forming said dielectric layer of ferroelectric material.
27. A method according to claim 19, wherein the step of forming said first interlayer dielectric layer comprises forming said first interlayer dielectric layer of boron-doped phosphosilicate glass (BPSG).
28. A method according to claim 19, wherein the step of forming said layer of liner material comprises forming said layer of liner material of iridium.
29. A method according to claim 19, wherein the step of forming said layer of liner material comprises forming said layer of liner material of iridium oxide.
30. A method according to claim 19, wherein the step of forming said first electrode comprises forming said first electrode of tungsten.

31. A method according to claim 19, wherein the step of forming said spacer layer comprises forming said spacer layer of electrically insulating material.

32. A method according to claim 19, wherein the step of forming said spacer layer comprises forming said spacer layer of silicon dioxide.

33. A method according to claim 19, wherein the step of forming said spacer layer comprises forming said spacer layer of tetraethyl orthosilicate (TEOS).

34. A method according to claim 19, wherein the step of forming said first barrier layer comprises forming said first barrier layer of a material substantially resistant to oxygen diffusion.

35. A method according to claim 19, wherein the step of forming said first barrier layer comprises forming said first barrier layer of silicon nitride.

36. A method according to claim 19, wherein the step of forming said second barrier layer comprises forming said second barrier layer of a material substantially resistant to oxygen diffusion.

37. A method according to claim 19, wherein the step of forming said buffer layer comprises forming said buffer layer of dielectric material.

38. A method according to claim 19, wherein the step of forming said buffer layer comprises forming said buffer layer of silicon dioxide.

39. A method according to claim 19, wherein the step of forming said layer of liner material comprises forming a glue layer to assist adhesion of said first electrode to said buffer layer.
40. A method according to claim 19, wherein the step of forming said dielectric layer comprises forming said dielectric layer of PZT.
41. A method according to claim 19, wherein the step of forming said second barrier layer comprises forming said second barrier layer of aluminium oxide (Al_2O_3).
42. A ferroelectric capacitor device formed according to the method of claim 18.
43. An FeRAM device formed according to the method of claim 18.